# Multipollutant Stakeholder Group Meeting

Louisville Metro Air Pollution Control District
November 20, 2019

# Welcome

- Keith H. Talley, Sr., APCD Director

# Introductions

- MPSG Co-chairs and Participants

# Ozone Formation Study

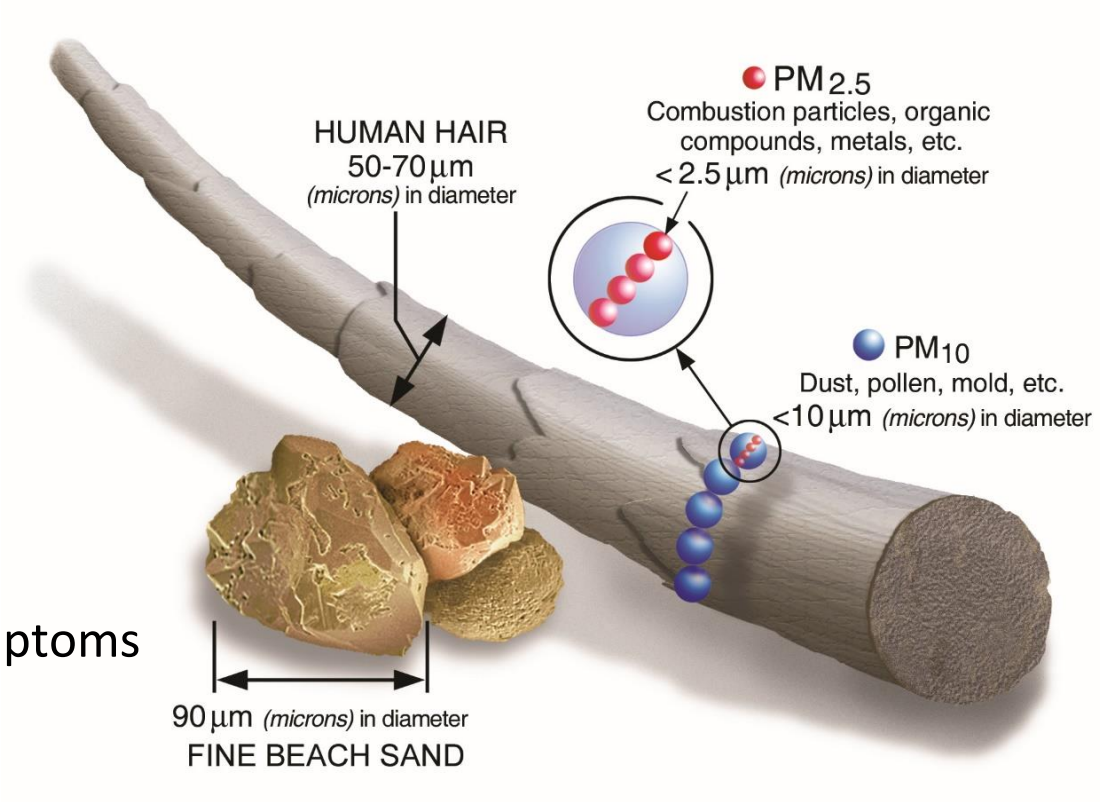
- Courtney Taylor, Ramboll

# Fine Particulate Overview

- Michelle King, APCD, Director of Program Planning

# Particulate Matter (PM)

- A complex mixture of particles and liquid droplets found in the air
- Categories:
  - Coarse Particles ($PM_{10}$)
  - Fine Particles ($PM_{2.5}$)
- Health effects:
  - Aggravated asthma
  - Decreased lung function
  - Increased respiratory symptoms
  - Irregular heartbeat
  - Heart attacks

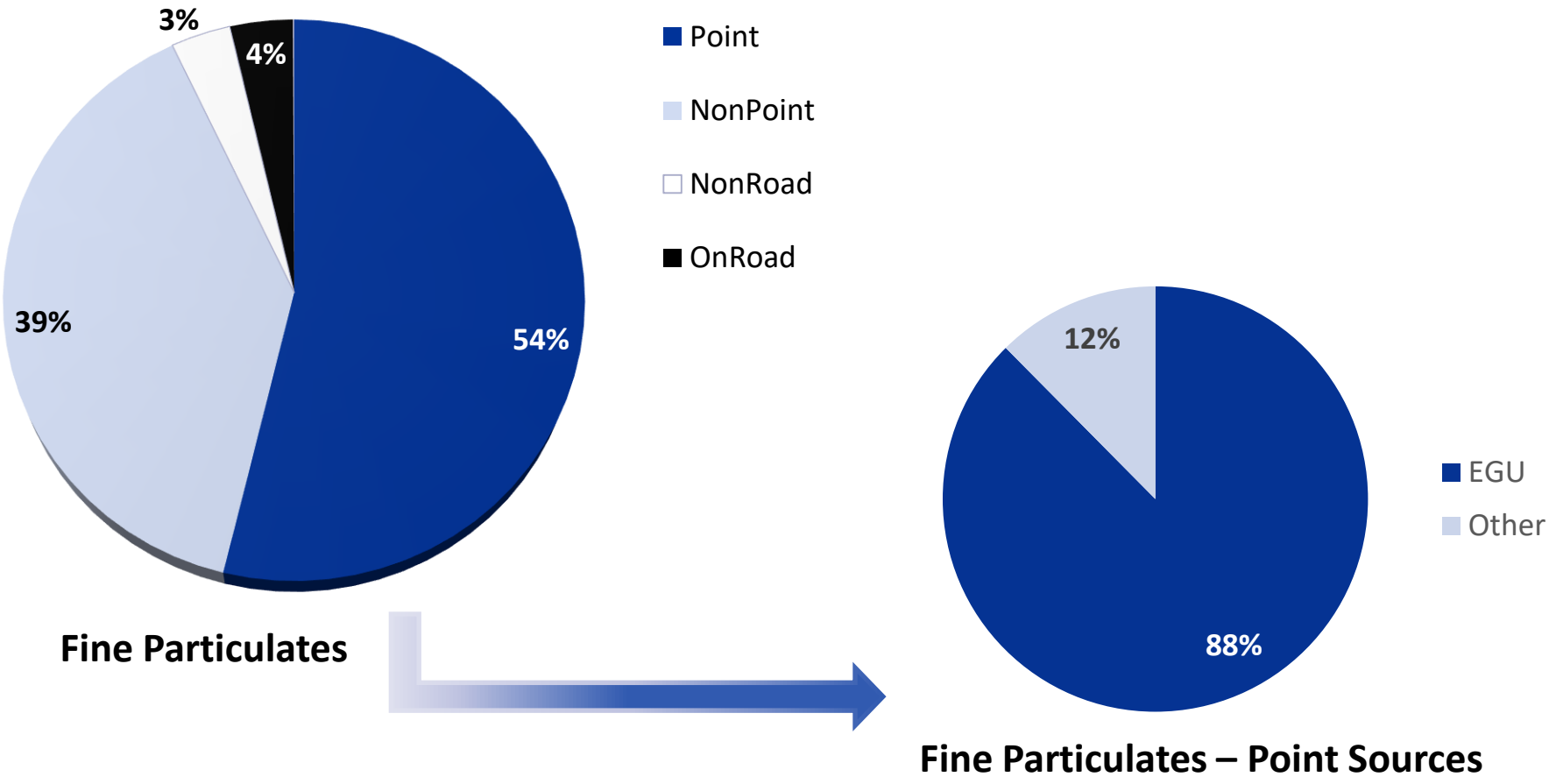


# Particulate Matter (PM)

- Where do they come from?
  - Primary Emissions are directly emitted from a source
    - Coal-fired plants, industrial boilers, and construction sites, residential fireplaces
    - Commercial cooking, industrial processes, diesel engines
  - Secondary Emissions are formed when gases, such as $SO_2$ and NOx, react in the air
    - Coal-fired plants
    - Industrial processes
    - Gasoline and diesel engines

# Louisville's Fine Particulates Inventory

## 2014

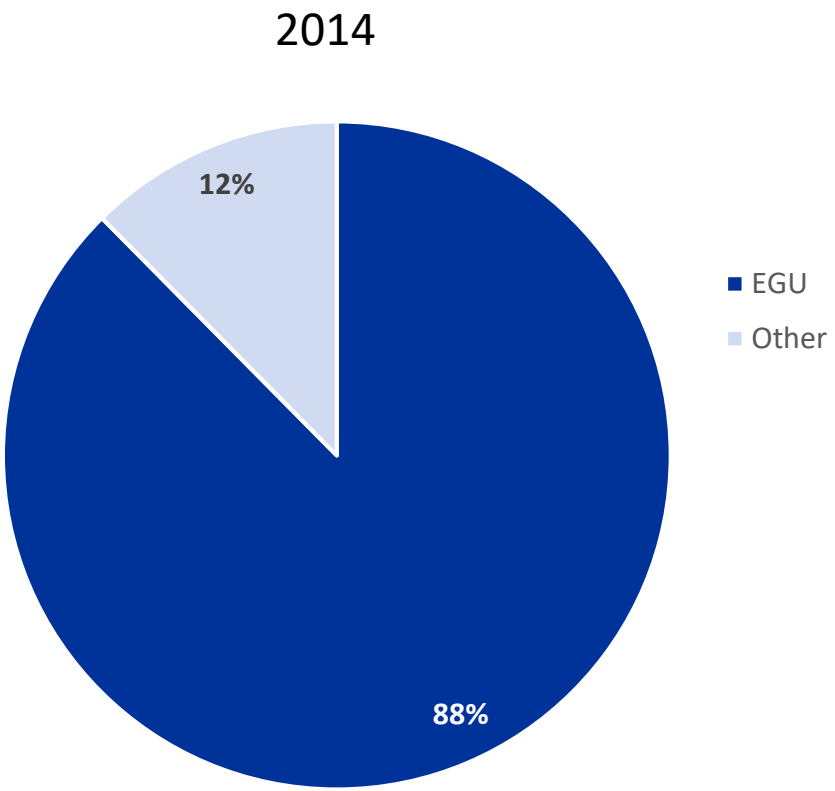


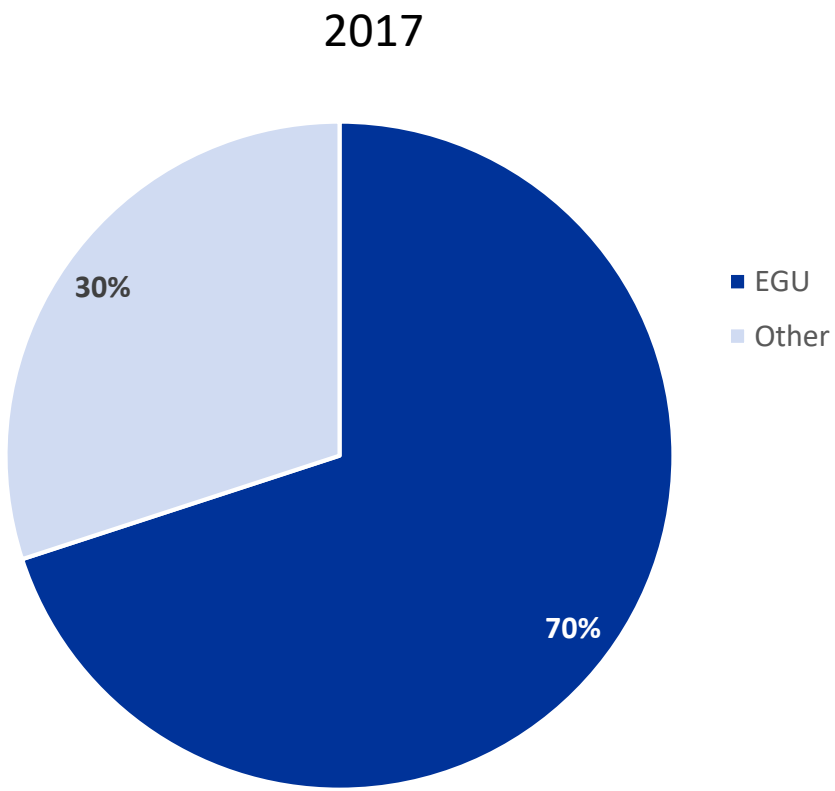



Data from 2014 National Emissions Inventory

# Louisville's Fine Particulates Inventory

## Point Sources, 2014 v. 2017



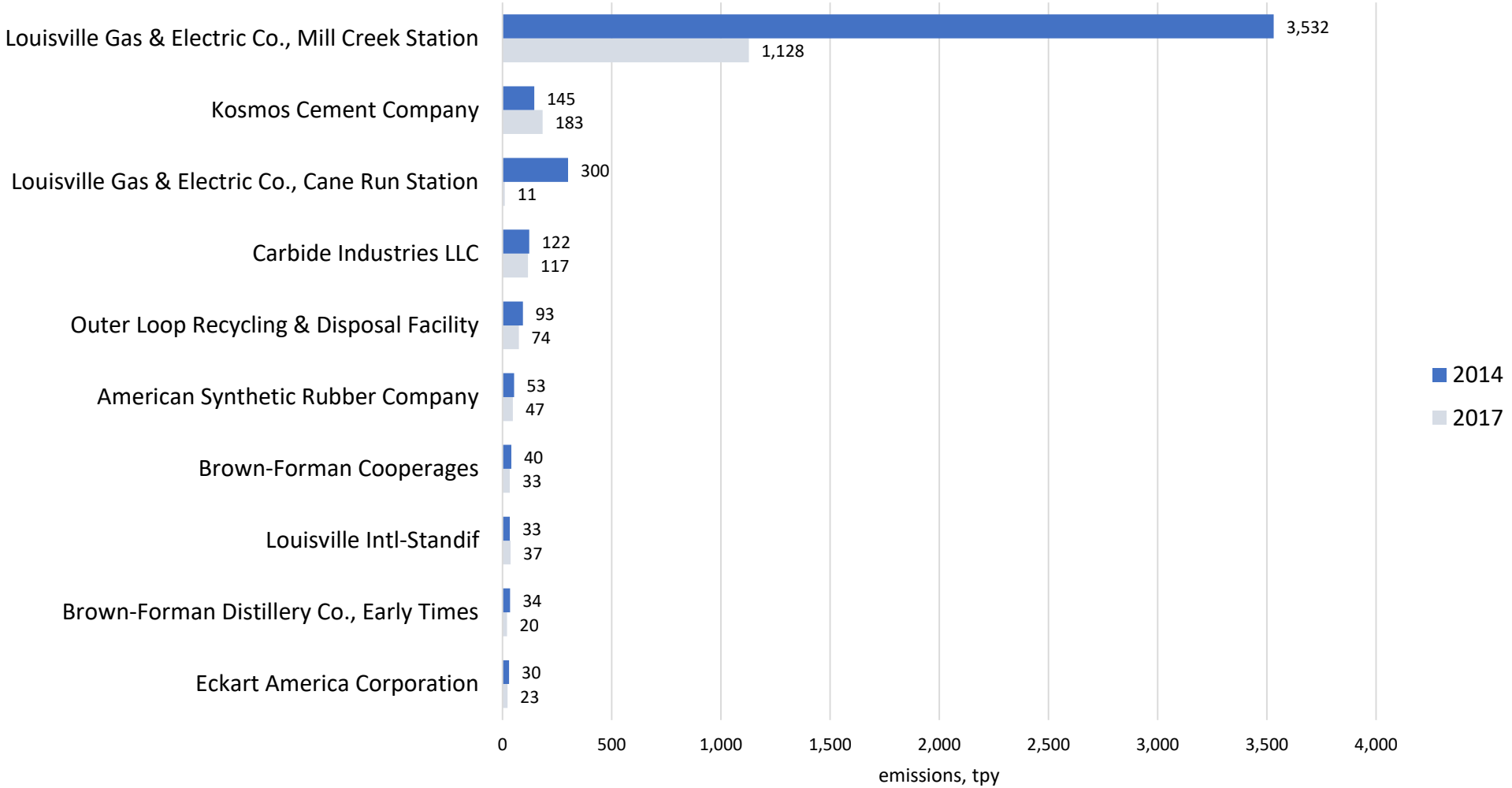





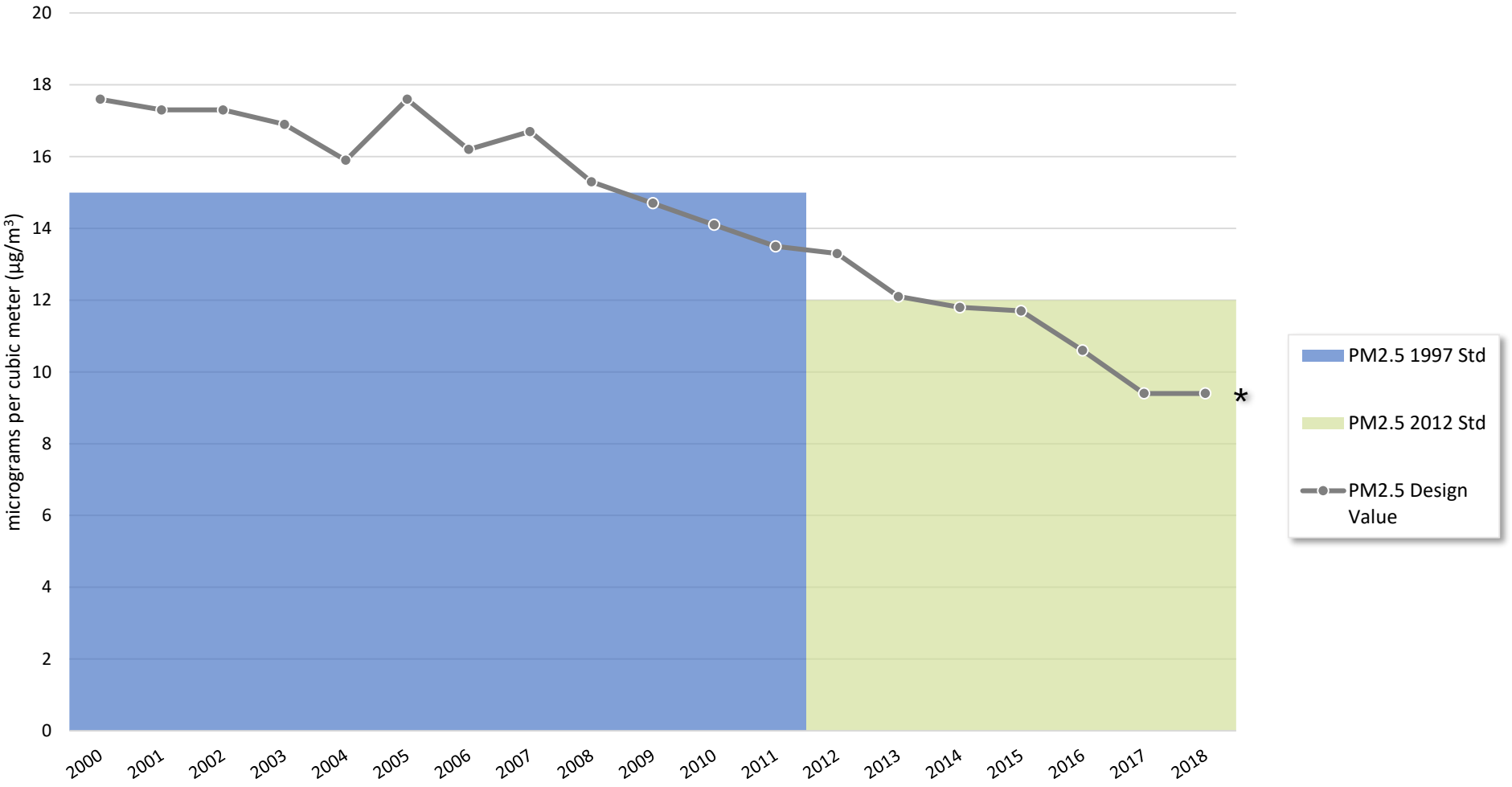

Data from 2014 & 2017 National Emissions Inventory

# Louisville's Fine Particulates Inventory

## Point Sources, 2014 v. 2017



# Louisville's Fine Particulates History




*2018 Design Value – 9.4 µg/m³

# Air Toxics Overview

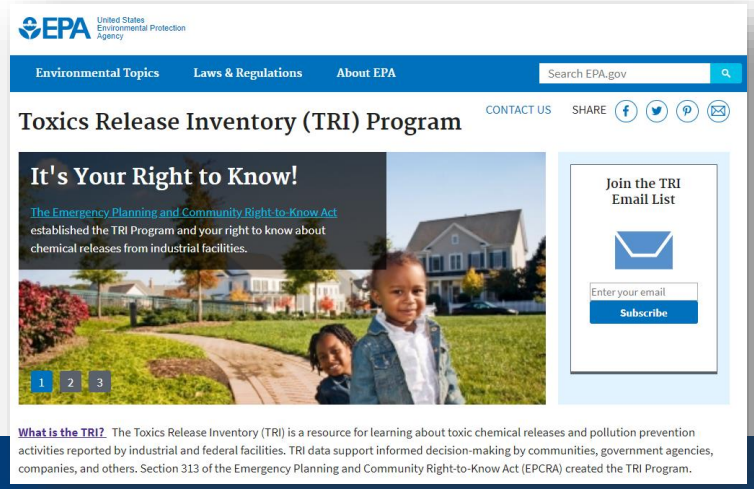
- Rachael Hamilton, APCD, Assistant Director

# What are Air Toxics?

- Air toxics are…
  - Hazardous Air Pollutants (HAPs)
    - Pollutants known/suspected to cause cancer or other serious health effects
  - Emitted from a variety of sources
    - *E.g.* cars, trucks buses, factories refineries, power plants, etc.
    - Can also come from natural sources (*e.g.* forest fires and volcanic eruptions)
- Exposure can occur in many ways
  - *E.g.* Breathing contaminated air, eating contaminated food products

# Toxics Release Inventory (TRI) Program

- Created by EPCRA (Section 313) in 1986
- Tracks the management of certain toxic chemicals that **may pose a threat to human health and the environment**
- U.S. facilities ***must*** report annually if:
  - Is in certain industries,
  - Has more than 10 full time employees, *and*
  - Manufactures, processes, or otherwise uses a TRI-listed chemical in quantities above threshold levels
- Report permitted *and* excess emissions releases to air, water, & land

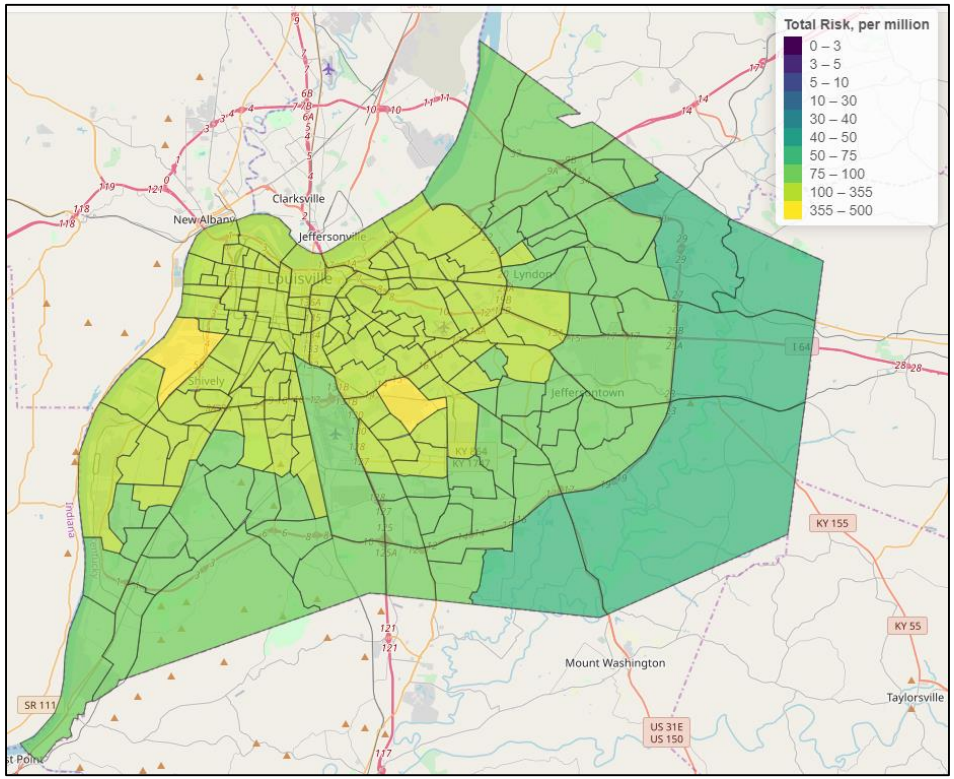


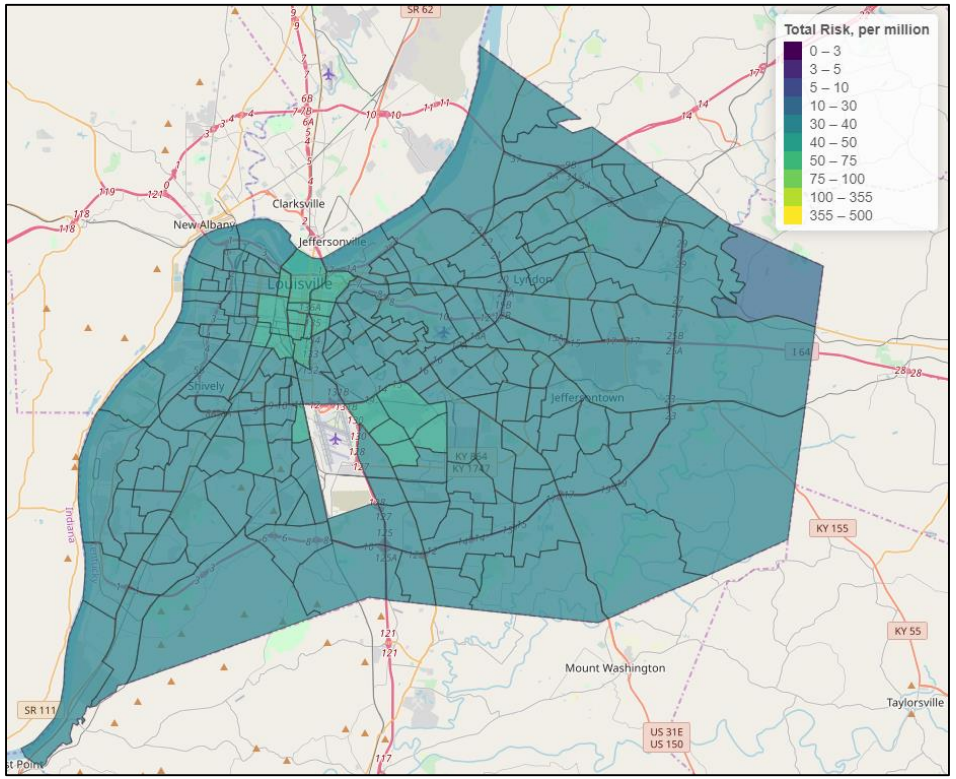
# National Air Toxics Assessment (NATA)

- Periodic national modeling of outdoor air toxics from all sources (2005, 2011, 2014)
- Designed to help reduce toxic air pollution and build on the large emissions cuts achieved in the United States since 1990
- Helps air quality scientists collect air toxics emissions data and learn where health risks may be high
- A screening tool for state, local and tribal air agencies

# Progress to Date: Total Health Risk

## 2005 v 2014 National Air Toxics Assessment



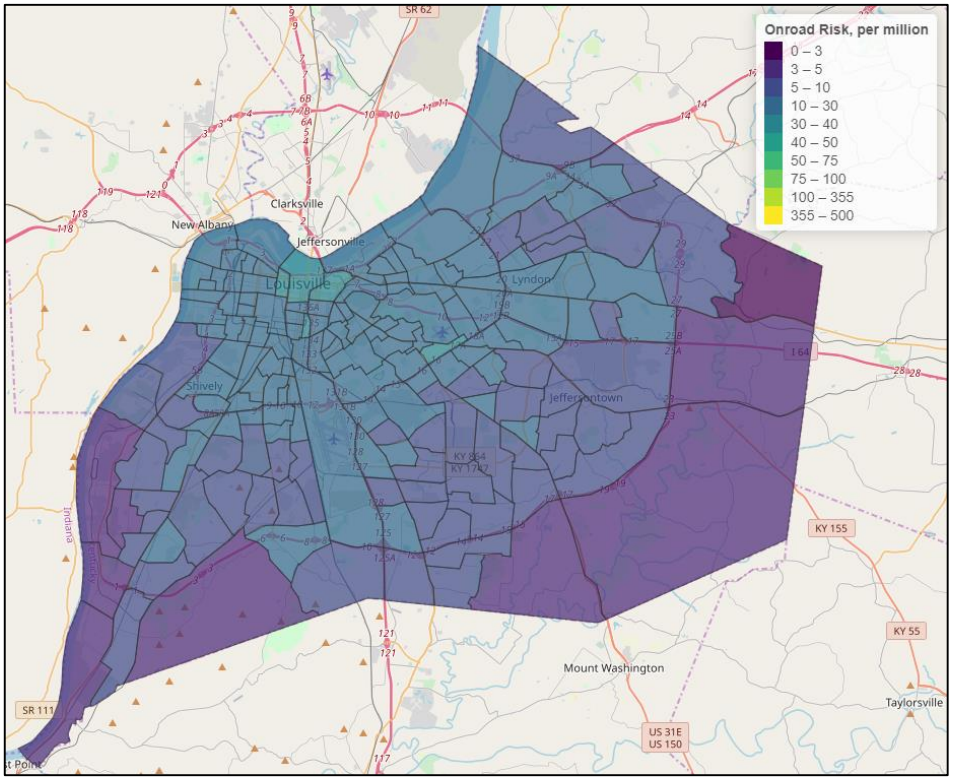



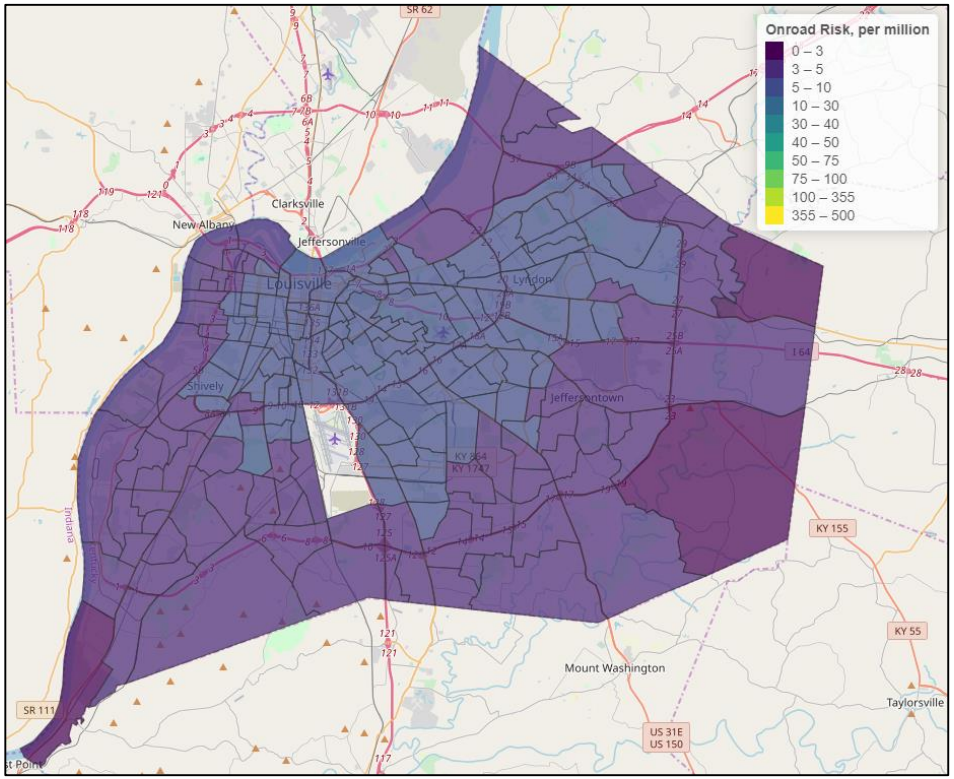



Source – NATA
https://www.epa.gov/national-air-toxics-assessment

# Progress to Date: Onroad Health Risk

## 2005 v 2014 National Air Toxics Assessment



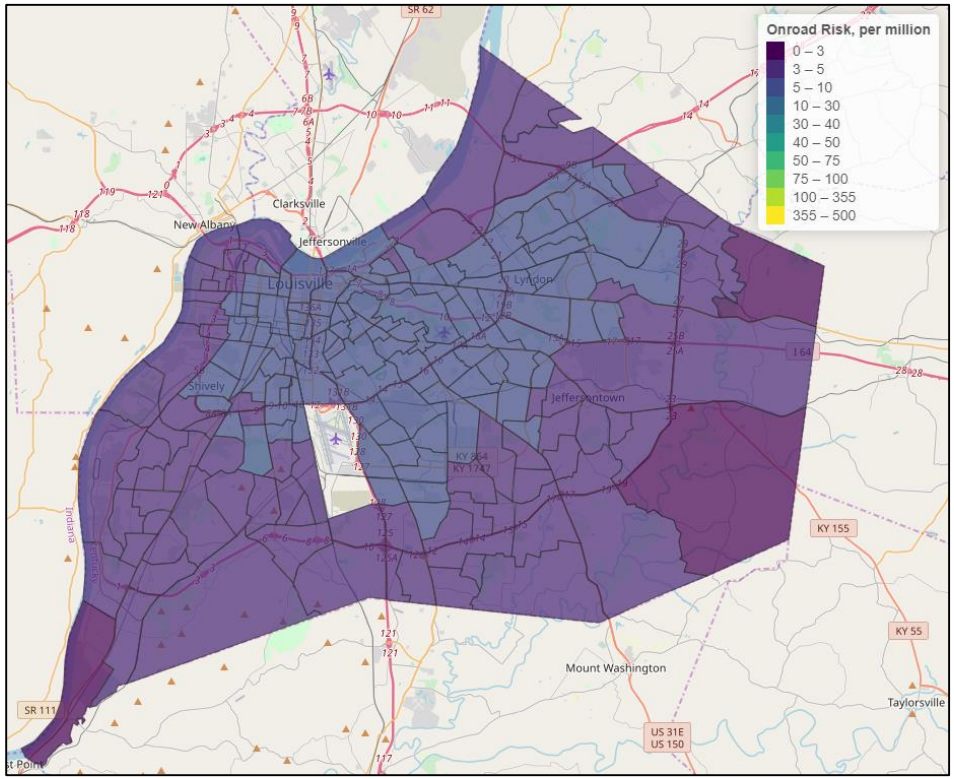



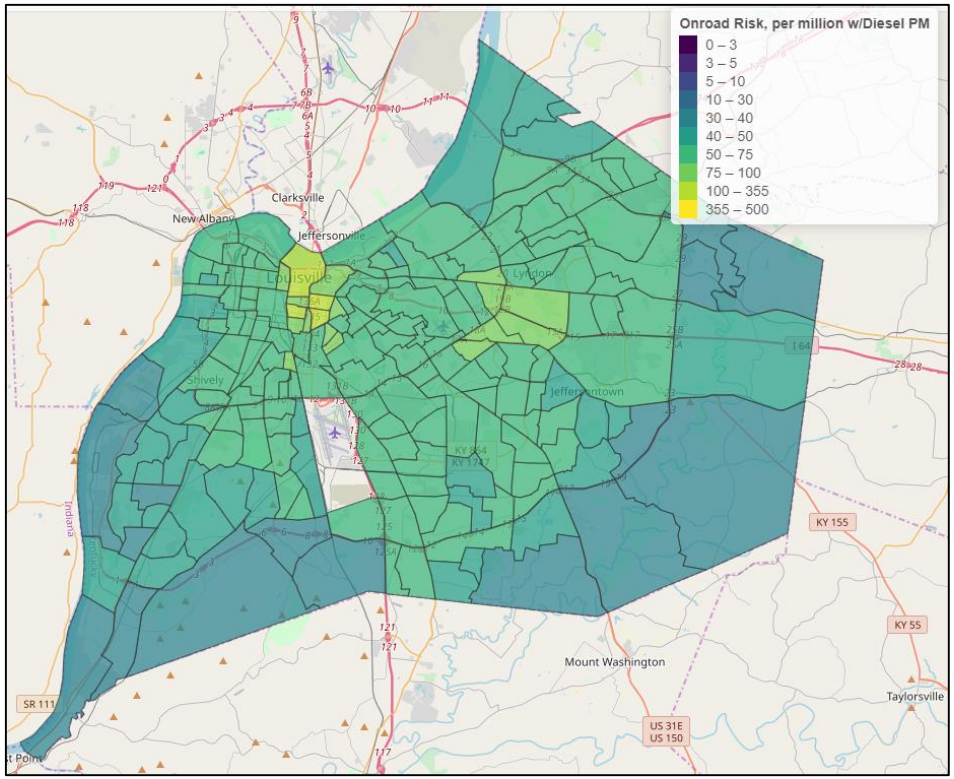



Source – NATA
https://www.epa.gov/national-air-toxics-assessment

# Progress Remaining: Onroad Health Risk

## 2014 National Air Toxics Assessment – Onroad Risk v. Onroad Risk w/Diesel PM



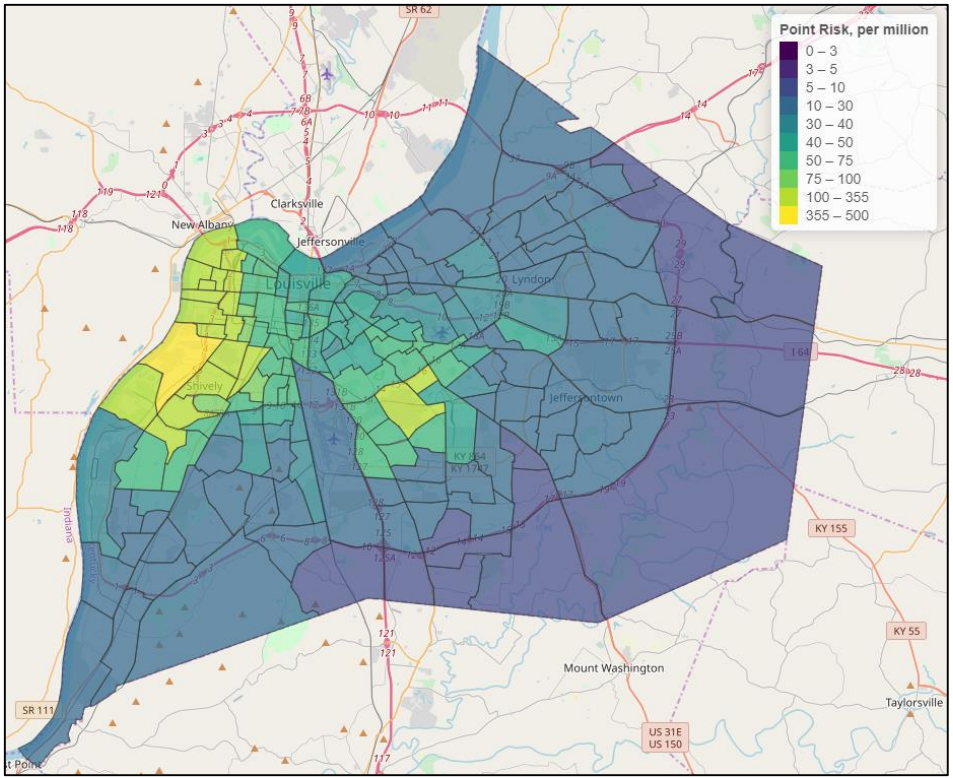



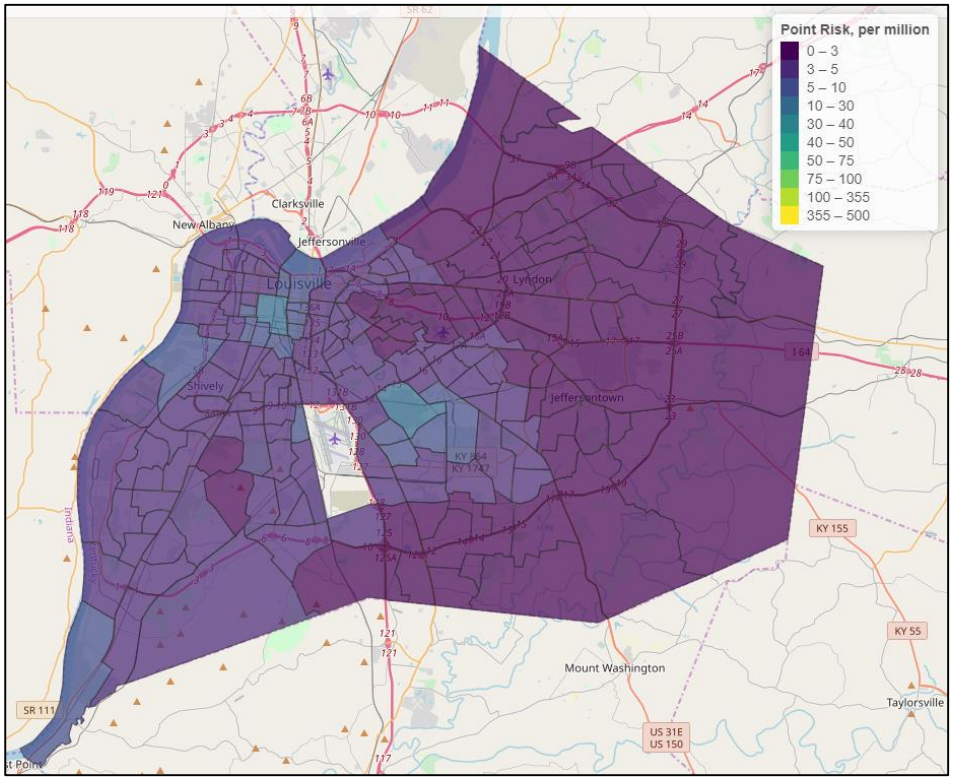



Source – NATA
https://www.epa.gov/national-air-toxics-assessment

# Progress to Date: Point Source Health Risk

## 2005 v 2014 National Air Toxics Assessment



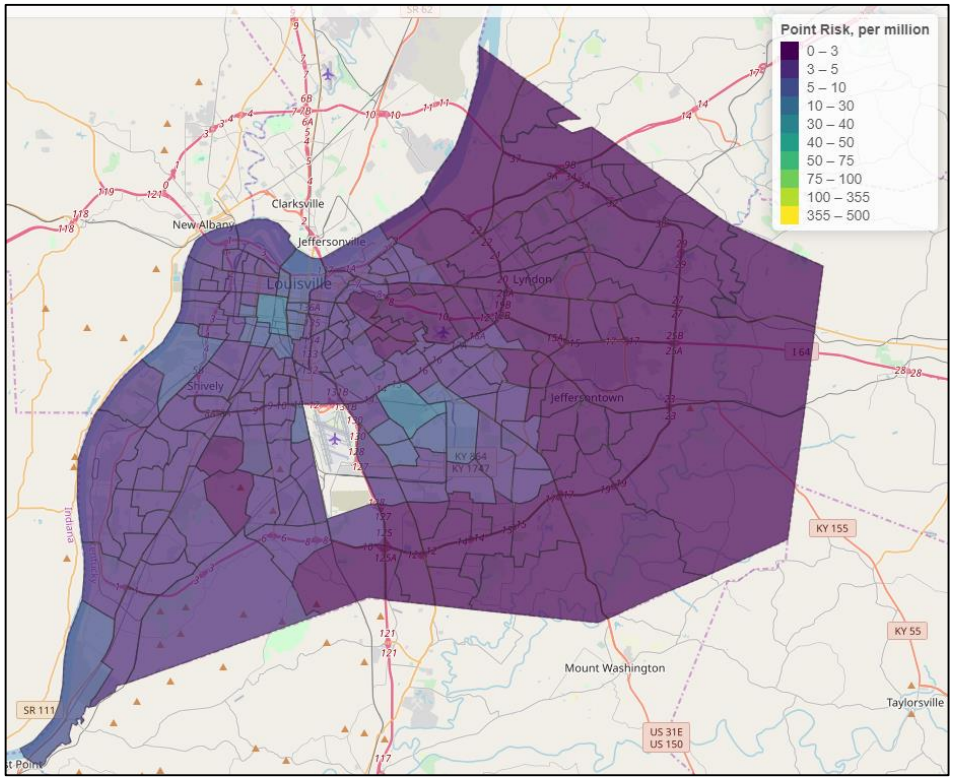



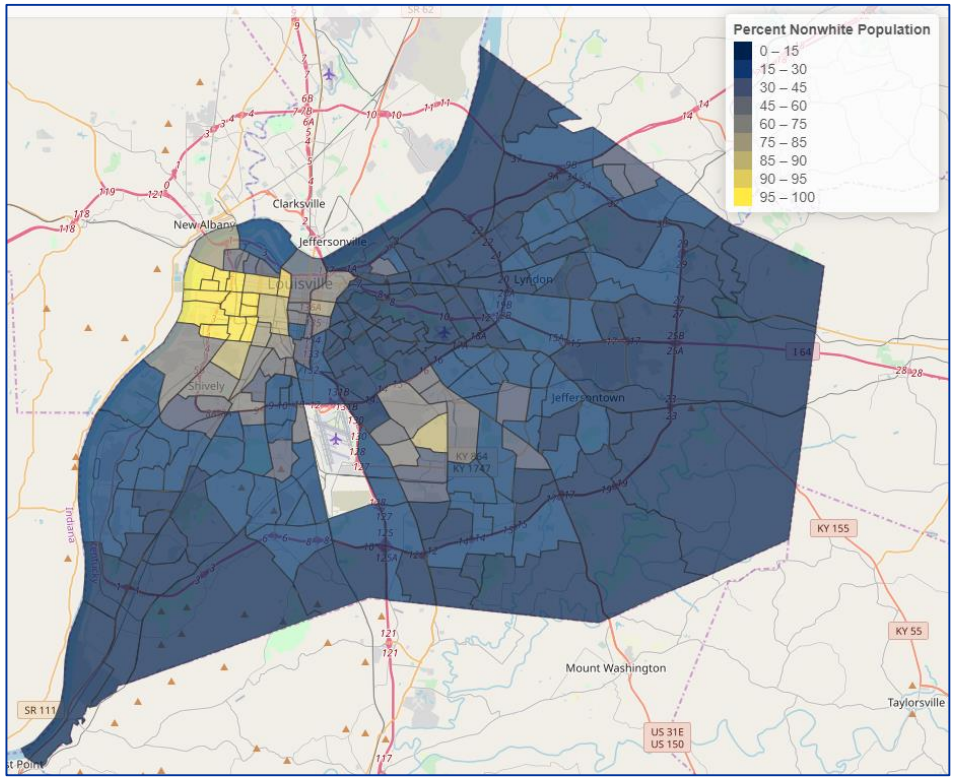



Source – NATA
https://www.epa.gov/national-air-toxics-assessment

# Progress Remaining: Environmental Justice

## 2014 National Air Toxics Assessment Point Risk v. 2010 Census Percent Minority



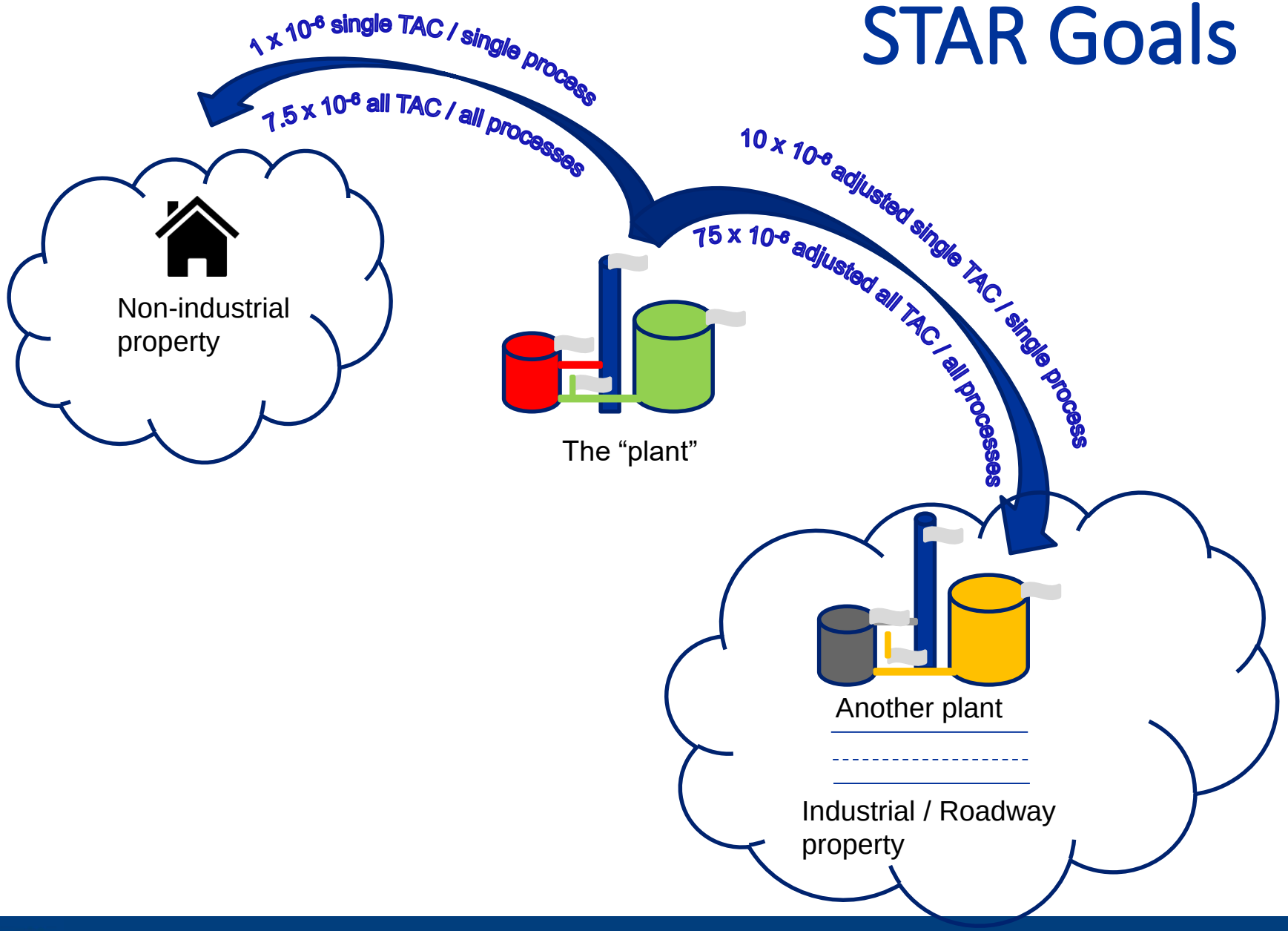



Sources – NATA, U.S. Census Bureau
https://www.epa.gov/national-air-toxics-assessment
https://www.census.gov/

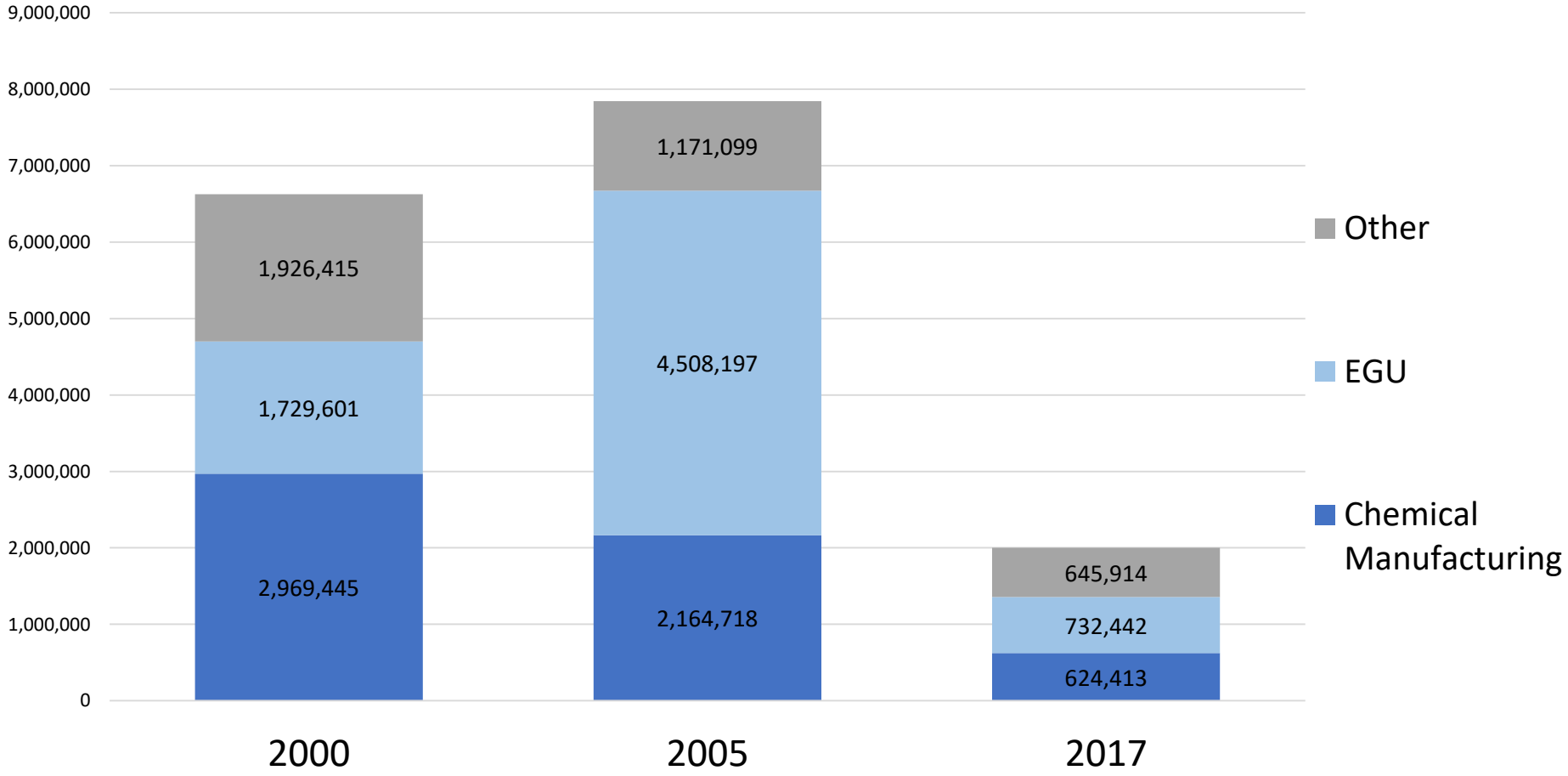
# STAR Program Highlights

- Provides a framework for determining the environmental acceptability of toxics
- Requires companies to assess and address air toxics emissions
- Requires APCD to assess and address other sources toxic emissions

# STAR Goals

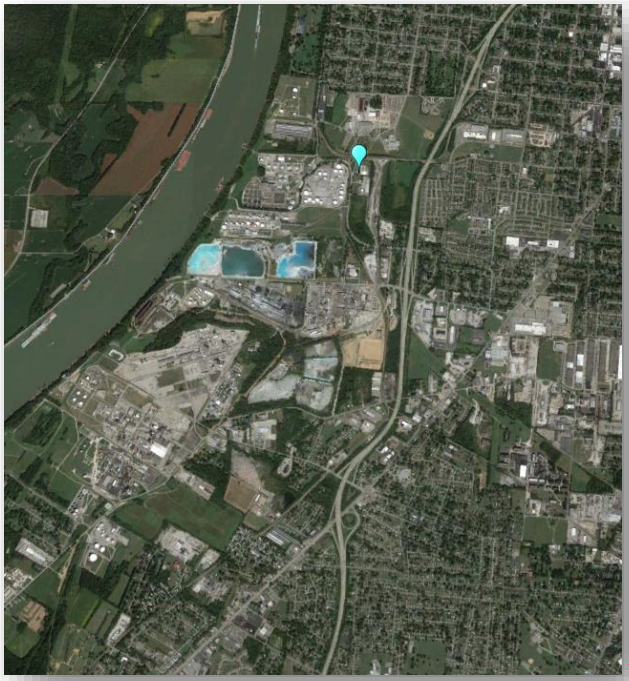

1 x 10-6 single TAC / single process
7.5 x 10-6 all TAC / all processes
10 x 10-6 adjusted single TAC / single process
75 x 10-6 adjusted all TAC / all processes
Non-industrial property
The "plant"
Another plant
Industrial / Roadway property

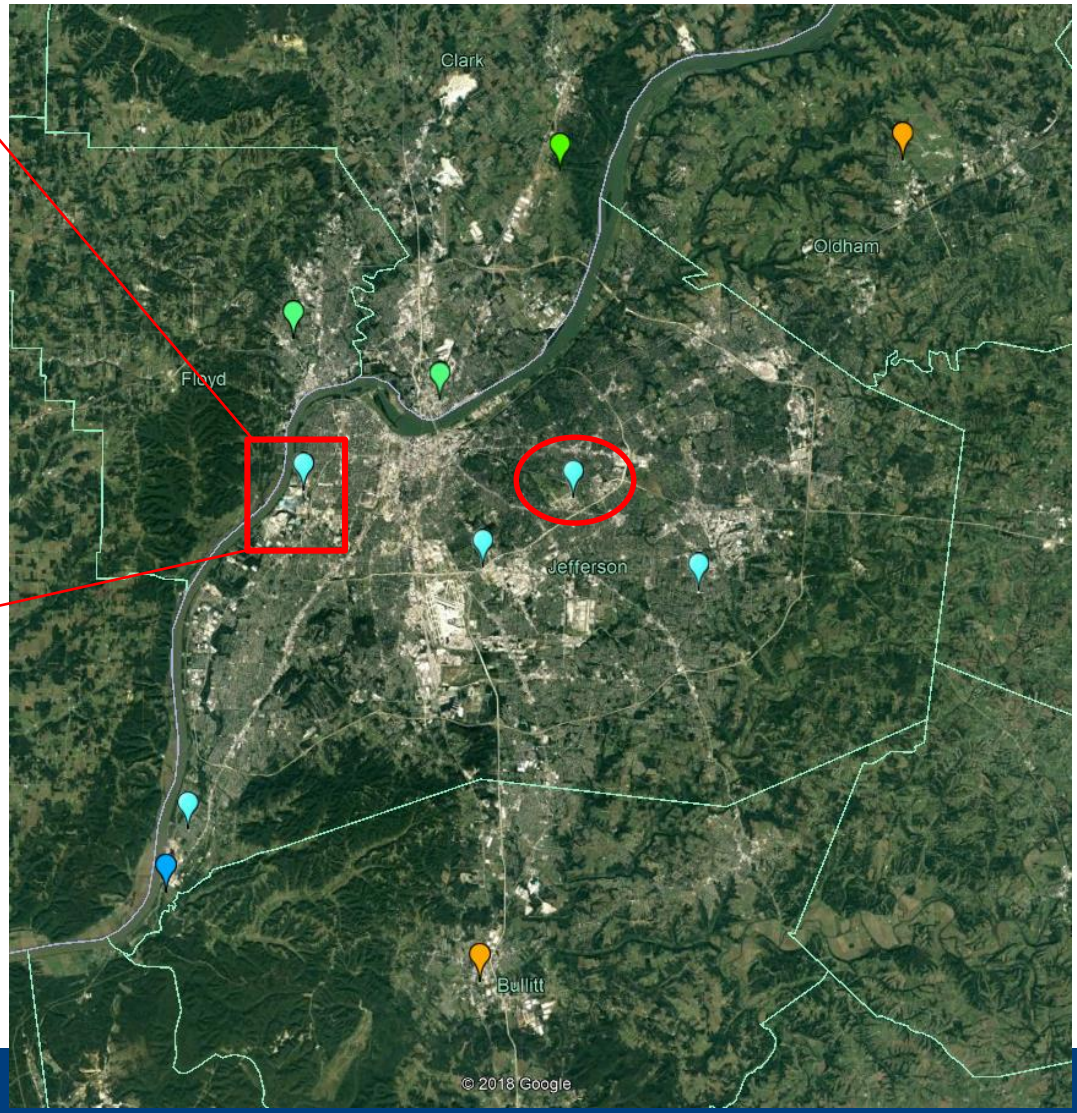
# Total Air Toxics 2000 to 2017

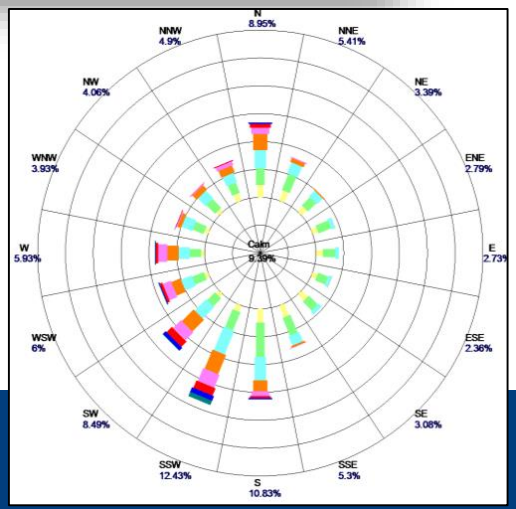



*Source: EPA Toxics Release Inventory*

# Air Toxics / PAMS Monitoring





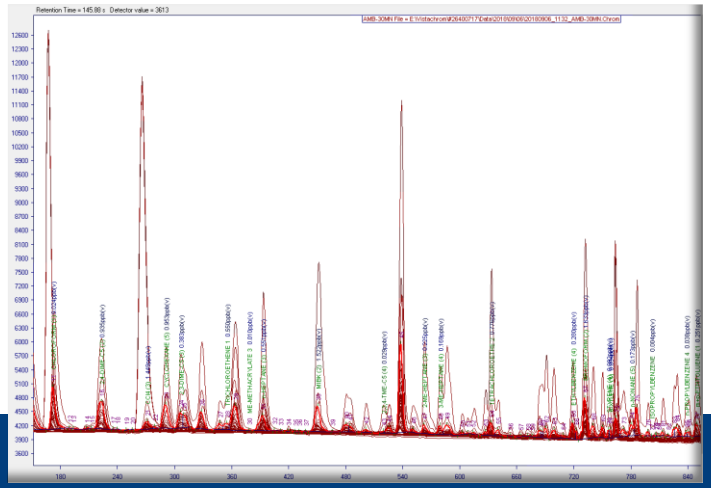
# Air Toxics / PAMS Monitoring

- Traditional Method
  - Manual collection using canisters
  - Samples typically collected once every 6 or 12 days
  - Samples shipped to lab for analysis
  - Samples represents 24-hr period

- Modern Method
  - Automated Gas Chromatography
    - Two Auto GCs – Dual FIDs
  - Samples collected every hour
  - Samples analyzed in near real time
  - Raw data available within the hour
  - While temporal resolution is improved, additional challenges exist

# Air Toxics / PAMS Monitoring

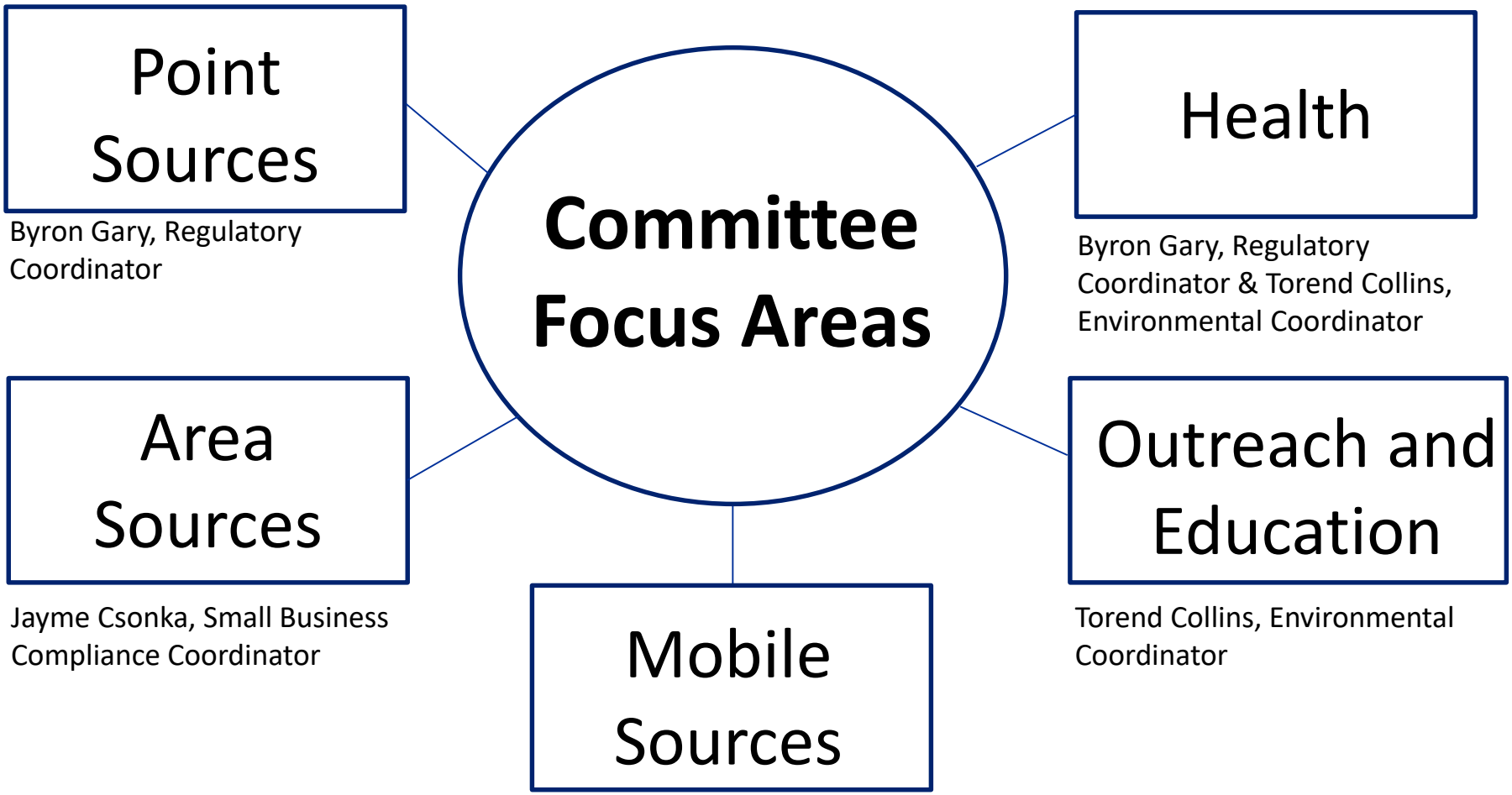
- Auto GC technology is complex and produces large amounts of data
- APCD is the 2nd AQ agency in the country to operate Chromatotec Auto GC
- Continuous refinement of methodologies expected
- APCD staff have worked extensively with manufacturer and participated in national workgroup calls to improve/ refine method



# Introduction to Committees

- Michelle King, APCD, Director of Program Planning

# MPSG Committee Staff



# Point Source Committee Goals

- Identify and assess sources and control measures currently in place or planned for ozone precursors at Point sources.
- Evaluate Ozone Formation Study modeling results to:
  - Identify additional possible voluntary control strategies for reaching attainment of the 8-hour Ozone NAAQS by 2021 deadline.
  - Evaluate possible additional control measures for informal RACT/RACM assessment.
- Evaluate the sufficiency of current regulations to meet the 2015 8-hour Ozone Nonattainment Area SIP Requirements and consider and recommend updates to these rules.
- Assess recommended strategies for co-benefits to fine particulate and air toxic emission reductions.

# Area Source Committee Goals

- Identify and assess sources and control measures currently in place or planned for ozone precursors at Area sources.
- Evaluate Ozone Formation Study modeling results to:
  - Identify additional possible voluntary control strategies for reaching attainment of the 8-hour Ozone NAAQS by 2021 deadline.
  - Evaluate possible additional control measures for informal RACT/RACM assessment.
- Evaluate the sufficiency of APCD compliance activities for area source emissions accountability (e.g., inspections, record keeping and reporting).
- Assess recommended strategies for co-benefits to fine particulate and air toxic emission reductions.

# Mobile Source Committee Goals

- Identify and assess sources of ozone precursors for Mobile sources and control measures currently in place or planned.
- Review best practices from other cities and present case studies on how those cities reduced emissions from mobile sources.
- Evaluate potential localized mobile source exposures in congested areas or heavily travelled road segments.
- Look for additional strategies to reduce emissions within Louisville Metro Government's own fleet and other large fleets operating locally.
- Assess recommended strategies for co-benefits to fine particulate and air toxic emission reductions.

# Health Committee Goals

- Identify health risks to Louisville Metro residents from exposure to ozone, fine particulates, and air toxics.
- Evaluate the potential for ozone, fine particulate, and air toxics reductions to improve health and monetize public health benefits where possible.
- Assess the disparate impacts of these pollutants on minority and low-income residents.
- Identify additional questions or areas of study to help inform the community on how to reduce exposure to air pollution and mitigate potential health impacts.

# Outreach & Education Committee Goals

- Review current efforts to communicate Louisville's nonattainment status for ozone and recommend additional strategies to raise awareness of the need for air quality improvement.
- Identify audiences for sharing information and conducting more engagement around air quality and its impact on health.
- Propose community partnerships to promote air quality and environmental health awareness.
- Propose new programs that give citizens opportunity and information to reduce their own emissions contribution and health impacts from poor air quality.
- Support/amplify the messaging of other groups that promote lowering air emissions and limiting exposure to emissions.

# Discussion and Questions

- All Attendees

# Meeting Wrap-Up

- Steve Sullivan, MPSG Co-chair

# Thank you!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